Ex:

① $y = \frac{1}{3}\boxed{\left(\frac{2}{5}\right)^x}$ (base) EX. DECAY	Exponential Function
② $y = \frac{2}{3}(6)^x$ EX. Growth	Exponential Growth Growth Factor
③ $y = 3(.75)^x$ EX. DECAY	Exponential Decay Decay Factor
④ $y = 2\left(\frac{7}{4}\right)^x$ EX. Growth	Asymptote

An exponential function has the form

$y = a \cdot b^x$ where $a \neq 0$ and the base b is a positive number other than 1.

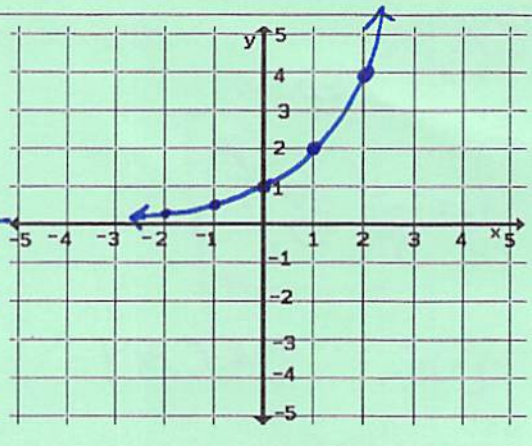
a = start value

b = growth or decay factor

Graph

$y = 2^x$

x	y
-2	1/4
-1	1/2
0	1
1	2
2	4



If $a > 0$ and $b > 1$, then the function $y = ab^x$, is an EXPONENTIAL GROWTH function, and **b** is called the **growth factor.**

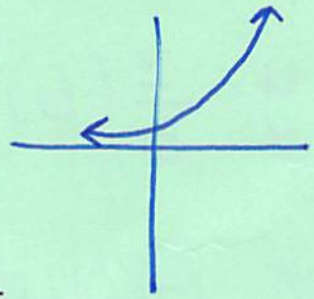
base (b) greater than one

Example:

$y = 2^x$

$y = (4/3)^x$

$y = 4^x$



An exponential decay function has the form $y = ab^x$, where $a > 0$ and $0 < b < 1$.

The base *b* of an EXPONENTIAL DECAY function is called the **decay factor.**

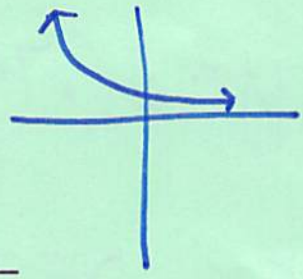
base (b) is between 0 & 1

Example:

$y = (1/2)^x$

$y = (2/3)^x$

$y = (\frac{1}{4})^x$



An asymptote is a line that a graph approaches more and more closely but never touches.